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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/759,686	01/16/2004	Joanna Schmit	121892.00002	8609
34282	7590	04/06/2006	EXAMINER	
QUARLES & BRADY STREICH LANG, LLP ONE SOUTH CHURCH AVENUE SUITE 1700 TUCSON, AZ 85701-1621			LEE, HWA S	
			ART UNIT	PAPER NUMBER
			2877	

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/759,686

Applicant(s)

SCHMIT ET AL.

Examiner

Andrew Hwa S. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-37 is/are rejected.
- 7) ☒ Claim(s) 38 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1/4/04.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

Claim Objections

1. Claims 31 and 37 are objected to because of the following informalities: “said out-of-phase deformation of the object surface” in claim 37 and “said means for acquiring” lack antecedent basis in claim 31. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. Claims 14-17, 32-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The recitation “applied uniformly” and “applied non-uniformly” with “throughout on an object surface” is vague. How is the means for changing applied throughout on an object surface?

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-13, 18-31 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Olszak et al. (US 6,624,894).

Olszak et al. ("Olszak" hereinafter) show a scanning interferometer with a reference signal to track the behavior of the scanner comprising:

means for producing successive interferograms at a predetermined nominal rate of phase change from a light beam reflected from the object surface;

means for implementing an algorithm for interferometric analysis of said interferograms;
and

means for changing said predetermined nominal rate such that each phase change
between successive data-acquisition frames falls within an operational window of the algorithm.

Although the apparatus of Olszak may not always be able to change the predetermined nominal rate that each phase change between successive data-acquisition frames falls within an operational window of the algorithm, if the apparatus is capable of doing it sometimes, then the apparatus meets the limitations as presently claimed. As disclosed in Applicant's Description of the Prior Art, the prior art is sometimes capable of changing said predetermined nominal rate such that each phase change between successive data-acquisition frames falls within an operational window of the algorithm since the disclosure states,

"If a sinusoidal object motion were present with an amplitude that caused the phase steps to remain within the operational window of the algorithm, as illustrated in FIG. 2 by the vertical phase-change window associated with each scanning step, it would still be possible to retrieve the object motion from conventional interferometric analysis because the algorithm would provide a measure of the phase change between acquisition frames, which in turn could be used in conventional manner to calculate the motion of the test surface in relation to the sample stage."

Furthermore, the means for changing the predetermined nominal rate does not claim when the change occurs, so a change that is made between the scanning of a first and second object would meet the limitation as presently claimed as would changing it during the calibration taught by Olszak

With regards to claims 2-12, these elements are well known as some are shown by Olszak and are also disclosed by Applicant as being known since the structure of the apparatus is disclosed as that of the prior art.

With regards to claim 13, Olszak shows a reference signal circuit applied to said means for acquiring successive interferograms.

With regards to claims 18 and 37, Olszak shows a method comprising:

acquiring successive interferograms produced at a predetermined nominal rate of phase change from a light beam reflected from said object surface;

implementing an algorithm for interferometric analysis of said interferograms; and
changing said predetermined nominal rate such that each phase change between successive data-acquisition frames falls within an operational window of the algorithm.

Although the apparatus of Olszak may not always be able to change the predetermined nominal rate that each phase change between successive data-acquisition frames falls within an operational window of the algorithm, if the apparatus is capable of doing it sometimes, then the apparatus meets the limitations as presently claimed. As disclosed in Applicant's Description of the Prior Art, the prior art is sometimes capable of changing said predetermined nominal rate such that each phase change between successive data-acquisition frames falls within an operational window of the algorithm since the disclosure states,

"If a sinusoidal object motion were present with an amplitude that caused the phase steps to remain within

the operational window of the algorithm, as illustrated in FIG. 2 by the vertical phase-change window associated with each scanning step, it would still be possible to retrieve the object motion from conventional interferometric analysis because the algorithm would provide a measure of the phase change between acquisition frames, which in turn could be used in conventional manner to calculate the motion of the test surface in relation to the sample stage."

Furthermore, the step of changing the predetermined nominal rate does not claim when the change occurs, so a change that is made between the scanning of a first and second object would meet the limitation as presently claimed as would changing it during the calibration taught by Olszak.

With regards to claims 19-30 and 36, these methods are well known as some are shown by Olszak and are also disclosed by Applicant as being known.

With regards to claim 31, Olszak shows a reference signal applied to said means for acquiring successive interferograms.

Allowable Subject Matter

5. Claim 38 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record fails to show or to suggest a method for measuring an out-of-plane deformation of

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an object surface using an interferometer device having all the steps as presently claimed wherein said step of changing said predetermined nominal rate such that each phase change between successive data-acquisition frames falls within an operational window of the algorithm is carried out with a feedback signal based on a prior knowledge of said out-of-plane deformation of the object surface.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Hwa S. Lee whose telephone number is 571-272-2419. The examiner can normally be reached on Tue-Fr.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley Jr. can be reached on 571-272-2800 ext 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Andrew Hwa Lee
Primary Examiner
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